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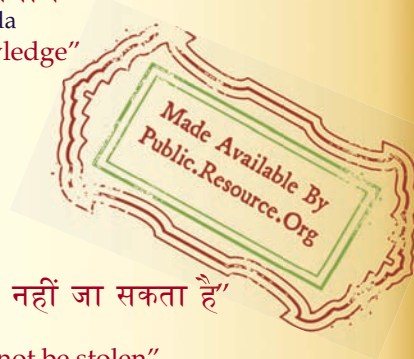
IS 10672 (1983): Mineral Mixtures for Supplementing Sheep and Goat Feeds [FAD 5: Livestock Feeds, Equipment and Systems]



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**IS : 10672 - 1983**

*Indian Standard*  
**SPECIFICATION FOR  
MINERAL MIXTURES FOR  
SUPPLEMENTING SHEEP AND GOAT FEEDS**

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**INDIAN STANDARDS INSTITUTION  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002**

# *Indian Standard*

## SPECIFICATION FOR MINERAL MIXTURES FOR SUPPLEMENTING SHEEP AND GOAT FEEDS

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**IS : 10672 - 1983**

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AMENDMENT NO. 1 JANUARY 1988

TO

IS:10672-1983 SPECIFICATION FOR MINERAL MIXTURES  
FOR SUPPLEMENTING SHEEP AND GOAT FEEDS

(Page .10, clauses B-5.1 and B-5.1.1)  
Substitute 'R' for 'R', wherever occurs.

(AFDC 15)

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Reprography Unit, BIS, New Delhi, India

**AMENDMENT NO. 2    JULY 1995**  
**TO**  
**IS 10672 : 1983    SPECIFICATION FOR MINERAL**  
**MIXTURES FOR SUPPLEMENTING SHEEP AND**  
**GOAT FEEDS**

( *Page 6, clause 5.2, line 2* ) — Substitute 'IS 1070 : 1992' for 'IS : 1070 - 1977' and in the corresponding foot-note, substitute 'Reagent grade water ( *third revision* )' for the existing foot-note.

( FAD 5 )

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Reprography Unit, BIS, New Delhi, India



**AMENDMENT NO. 3 AUGUST 1997**  
**TO**  
**IS 10672 : 1983 SPECIFICATION FOR MINERAL**  
**MIXTURES FOR SUPPLEMENTING SHEEP AND GOAT**  
**FEEDS**

( *Page 6, Appendix A, clause A-1* ) — Delete 'Bone-meal (sterilized )  
( conforming to IS : 1942 - 1968† )' and 'Calcined bone-meal'.

( *Page 6, footnote with '†' mark* ) — Delete.

( FAD 5 )

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Reprography Unit, BIS, New Delhi, India

# *Indian Standard*

## SPECIFICATION FOR MINERAL MIXTURES FOR SUPPLEMENTING SHEEP AND GOAT FEEDS

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 30 September 1983, after the draft finalized by the Animal Feeds Sectional Committee had been approved by the Agricultural and Food Products Division Council.

**0.2** Minerals have many vital functions in the body and the vital processes in a living organism are dependent on the presence of the various mineral salts in proper proportion. In view of the vital role of minerals, to ensure optimum health and productivity in livestock, it is essential to provide minerals, wherever necessary, in adequate quantity and proportion. It has, therefore, become a sound animal husbandry practice to incorporate the requisite minerals in the feed ration of animals by the addition of a mixture of different substances containing these minerals. It is expected that this standard will assist in the manufacture of a mineral mixture of the required quality for supplementing sheep and goat feeds.

**0.3** The mineral mixture may be fed, on an average, at the rate of 3 percent of the concentrate mixture under normal feeding conditions. It is expected that farmer will add the required amount of common salt in mineral mixture to ensure growth and milk production in animals.

**0.4** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS:2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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### 1. SCOPE

**1.1** This standard prescribes the requirements and the methods of sampling and test for a mineral mixture for supplementing sheep and goat feeds.

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\*Rules for rounding off numerical values ( *revised* ).

## 2. REQUIREMENTS

**2.1 Ingredients** — Any of the ingredients given in Appendix A shall be used for the preparation of mineral mixture. All ingredients used shall be of a quality suitable for animal consumption and shall contain no substances harmful to goat and sheeps.

**2.2 Description** — The mineral mixture shall be in the form of a free flowing powder, thoroughly mixed and completely homogeneous. It shall have been ground to such fineness that not less than 70 percent by mass of the material shall pass through 106-micron IS Sieve [ see IS:460 ( Part 1 )-1978\* ].

**2.3** The mineral mixture shall be free from adulterants, insect or visible fungus infestation and undesirable odour.

**2.4** Mineral mixtures shall also conform to the requirements given in Table 1.

**2.4.1** Mineral mixtures shall also be free from spores of *Bacillus anthracis*, *Clostridium* sp. when tested by method described in 4, 5 and 6 of IS:7874 ( Part 3 )-1975†.

## 3. PACKING AND MARKING

**3.1 Packing** — The material shall be packed in moisture-proof bags, carton boxes or drums. All containers shall be sound, clean and free from causal agents of infections diseases and parasites.

**3.2 Marking** — Each container shall be marked or labelled giving the following information:

- a) Name of the material,
- b) Name of the manufacturer,
- c) Batch or code number,
- d) Net mass of contents, and
- e) Date of manufacture.

**3.2.1** Each container shall also have on it the following information. This may also be done by enclosing in each container a leaflet giving the following information:

- a) Name of the material,
- b) Ingredients,
- c) Guaranteed composition, and
- d) Directions for use ( the quantity of salt required to be added before use shall be indicated ).

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\*Specification for test sieves: Part 1 Wire cloth test sieves ( *second revision* ).

†Methods of tests for animal feeds and feeding stuffs: Part 3 Microbiological methods.

**TABLE 1 REQUIREMENTS FOR MINERAL MIXTURE FOR  
SUPPLEMENTING SHEEP AND GOAT FEEDS**

( Clause 2.4 )

SL No.	CHARACTERISTIC	REQUIRE- MENT	METHOD OF TEST, REF TO CL No. OF		
			IS:7874 (Part 1)- 1975*	IS:7874 (Part 2)- 1975†	IS:3204- 1978‡
(1)	(2)	(3)	(4)	(5)	(6)
i)	Moisture, percent by mass, <i>Max</i>	5	4	—	—
ii)	Calcium ( as Ca ), percent by mass, <i>Min</i>	30	—	5	—
iii)	Phosphorus ( as P ), percent by mass, <i>Min</i>	14	—	6	—
iv)	Iron, percent by mass, <i>Min</i>	0.55	—	7	—
v)	Iodine ( as KI ), percent by mass, <i>Min</i>	0.35	—	8	—
vi)	Copper, percent by mass, <i>Min</i>	0.03	—	9	—
vii)	Manganese, percent by mass, <i>Min</i>	0.08	—	10	—
viii)	Cobalt, percent by mass, <i>Min</i>	0.008	—	11	—
ix)	Fluorine, percent by mass, <i>Max</i>	0.03	—	12	—
x)	Zinc, percent by mass, <i>Min</i>	0.2	—	13	—
xi)	Acid insoluble ash, percent by mass, <i>Max</i>	3.0	10	—	—
xii)	Sulphur, percent by mass, <i>Min</i>	0.13	—	—	A-3

NOTE — The values specified for characteristics (ii) to (xii) are on moisture-free basis.

\*Methods of tests for animal feeds and feeding stuffs: Part 1 General methods.

†Methods of tests for animal feeds and feeding stuffs: Part 2 Minerals and trace elements.

‡Specification for limestone for chemical industry ( *first revision* ).

**3.2.2** Each container may also be marked with the ISI Certification Mark.

**NOTE** — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

#### **4. SAMPLING**

**4.1** Representative samples of the material for testing conformity to this specification shall be drawn according to the method prescribed in Appendix B.

#### **5. TESTS**

**5.1** Tests shall be carried out as prescribed in 2.4.1 and the relevant appendices specified in col 4 and 5 of Table 1.

**5.2 Quality of Reagents** — Unless specified otherwise, pure chemicals and distilled water (*see* IS : 1070-1977\*) shall be employed in tests.

**NOTE** — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

## **A P P E N D I X A**

( *Clause 2.1* )

### **INGREDIENTS FOR MINERAL MIXTURES**

**A-1.** The following ingredients shall be used for compounding mineral mixtures for supplementing sheep and goat feeds:

Bone-meal ( sterilized ) ( conforming to IS : 1942-1968† )

Calcined bone-meal

Chalk ( calcium carbonate )

Common salt

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\*Specification for water for general laboratory use ( *second revision* ).

†Specification for bone-meal as livestock feed supplement ( *first revision* ).

Dicalcium phosphate  
Potassium iodide or potassium iodate  
Sodium carbonate  
Sodium thiosulphate  
Starch  
Yellow or red oxide of iron  
Manganese sulphate  
Copper sulphate  
Cobalt chloride  
Cobalt sulphate  
Zinc chloride  
Zinc sulphate

## **A P P E N D I X B**

*( Clause 4.1 )*

### **SAMPLING OF MINERAL MIXTURE FOR SUPPLEMENTING SHEEP AND GOAT FEEDS**

#### **B-1. GENERAL REQUIREMENTS OF SAMPLING**

**B-1.0** In drawing, preparing, storing and handling test samples, the following precautions and directions shall be observed.

**B-1.1** Samples shall be taken in a protected place, not exposed to damp air, dust or soot.

**B-1.2** The sampling instrument shall be clean, dry and sterile.

**B-1.3** Precautions shall be taken to protect the samples, the material being sampled, the sampling instrument and the containers for samples from adventitious contamination.

**B-1.4** The samples shall be placed in clean, dry and sterile glass containers. The sample containers shall be of such size that they are almost completely filled by the sample.

**B-1.5** Each container shall be sealed air-tight after filling and marked with full details of sampling, date of sampling, date of manufacture, batch number, name of the manufacturer, and other important particulars of the consignment.

**B-1.6** Samples shall be stored in such a manner that the temperature of the material does not vary unduly from the normal temperature.

**B-1.7** Sampling shall be done by a person agreed to between the purchaser and the vendor and in the presence of the purchaser ( or his representative) and the vendor ( or his representative ).

## **B-2. SCALE OF SAMPLING**

**B-2.1** Lot — All the containers in a single consignment of the material drawn from a single batch of manufacture shall constitute a lot. If a consignment is declared to be consisting of different batches of manufacture, the batches shall be grouped separately and the containers in each group shall constitute a separate lot.

**B-2.1.1** Samples shall be tested for each lot for ascertaining conformity of the material to the requirements of this specification.

**B-2.2** The number of containers to be selected from a lot shall depend on the size of the lot and shall be in accordance with col 1 and 2 of Table 2.

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**TABLE 2 NUMBER OF CONTAINERS TO BE  
SELECTED FOR SAMPLING**

<b>LOT SIZE</b>	<b>NUMBER OF CONTAINERS TO BE SELECTED FOR SAMPLING</b>
<i>N</i>	<i>n</i>
(1)	(2)
2 to 15	2
16 to 40	3
41 to 65	4
66 to 110	5
111 to 250	7
Over 250	10

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**B-2.3** The containers to be selected for sampling shall be chosen at random from the lot and for this purpose a random number table ( *see* IS:4905-1968\* ) as agreed to between the purchaser and the vendor shall be used. If such a table is not available the following procedure shall be adopted:

Starting from any container count 1, 2, 3, etc, up to *r* and so on.  
Every *r*th container shall be withdrawn from the lot to give a sample for test,

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\*Methods of random sampling.

where

$$r = \frac{N}{n},$$

$N$  being the number of containers in the lot and  $n$  the number of containers to be chosen according to Table 2. If  $r$  comes out to be a fractional number, its value shall be taken to be as equal to its integral parts.

### B-3. TEST SAMPLES AND REFEREE SAMPLES

**B-3.1 Preparation of Individual Samples** — Draw with an appropriate sampling instrument equal quantities of the material from different parts of each container selected according to Table 2. The total quantity of material drawn from each container shall be not less than 1.5 kg. Mix all the portions of the material drawn from the same container thoroughly. Take out about 0.75 kg of the material and divide it into three equal parts. Each portion thus obtained shall constitute the test sample representing that particular container and shall be transferred immediately to clean and dry containers and sealed air-tight. These shall be labelled with the particulars given in B-1.5. The individual samples so obtained shall be divided into three sets in such a way that each set has a test sample representing each container selected. One of the sets shall be for the purchaser, another for the vendor and the third as the referee sample.

**B-3.2 Preparation of Composite Samples** — From the mixed material from each selected container remaining after the individual samples have been taken, equal quantities of the material from each container shall be taken and mixed together so as to form a composite sample weighing not less than 0.75 kg. This composite sample shall be divided into three equal parts and transferred to clean and dry containers and labelled with the particulars given in B-1.5 and sealed air-tight. One of these samples shall be for the purchaser, another for the vendor and the third as the referee sample.

**B-3.3 Referee Samples** — Referee samples shall consist of a set of test samples (see B-3.1) and composite samples (see B-3.2) and shall bear the seals of the purchaser and the vendor and shall be kept at a place agreed to between the two.

### B-4. NUMBER OF TESTS

**B-4.1** Tests for calcium shall be conducted individually on each of the samples constituting the set of test samples (see B-3.1).

**B-4.2** Tests for remaining characteristics specified in 2.4 shall be conducted on the composite samples (see B-3.2).



**B-5. CRITERION FOR CONFORMITY**

**B-5.1 Calcium Content** — Each of the test results on individual samples for calcium content shall be recorded. The mean ( $\bar{X}$ ) and range ( $\bar{R}$ ) of the test results shall be computed as given below:

$$\text{Mean ( } \bar{X} \text{ )} = \frac{\text{Sum of the test results}}{\text{Number of the test samples}}$$

$$\text{Range ( } \bar{R} \text{ )} = \text{Difference between the maximum and the minimum values of the test results.}$$

**B-5.1.1** The lot shall be considered as satisfying this requirement if the expression ( $\bar{X} - 0.4 \bar{R}$ ) is greater than or equal to 30.

**B-5.2** The lot shall be declared as conforming to the requirements of this specification, if B-5.1 is satisfied and all the test results on the composite sample satisfy the remaining requirements as given in this specification.

( Continued from page 2 )

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## INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

### Base Units

<i>Quantity</i>	<i>Unit</i>	<i>Symbol</i>
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

### Supplementary Units

<i>Quantity</i>	<i>Unit</i>	<i>Symbol</i>
Plane angle	radian	rad
Solid angle	steradian	sr

### Derived Units

<i>Quantity</i>	<i>Unit</i>	<i>Symbol</i>	<i>Definition</i>
Force	newton	N	1 N = 1 kg. m/s <sup>2</sup>
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m <sup>2</sup>
Frequency	hertz	Hz	1 Hz = 1 c/s (s <sup>-1</sup> )
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m <sup>2</sup>

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